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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,561	08/11/2008	Qi Chen	CHEN3985/FJD	1683
23364 7590 01/29/2010 BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314-1176				
EXAMINER				
LEE, BENNY T				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/586,561

**Applicant(s)**

CHEN ET AL.

**Examiner**

Benny Lee

**Art Unit**

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 July 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 24-46 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 24-41; 42-46 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 20 July 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/GS-08)  
Paper No(s)/Mail Date 20 July 2006  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification are: Page 1, line 23, note that "with" should be rewritten as --having-- for idiomatic clarity; line 24, note that "known" should be rewritten as --present-- for idiomatic clarity; lines 26, 27, note that "... are, since this ... structures, likewise ..." should be rephrased for idiomatic clarity; line 31, note that "favorable" should be rewritten as --effective-- for idiomatic clarity. Page 2, line 27, it is noted that "in- or out-" should be rephrased as --input or output-- for idiomatic clarity. Page 3, lines 6, 7; page 4, line 10; page 7, line 29: note that "in-coupling" should be rewritten as --input coupling-- at each occurrence for idiomatic clarity. Page 3, line 31, note that "favorably" should be rewritten as --effectively-- for idiomatic clarity. Page 4, line 10, note that "out-coupling" should be rewritten as --output coupling-- for idiomatic clarity. Page 4, line 31 & page 5, lines 1, 4, 8, note that --depicts-- should be inserted after the respective figure number for idiomatic clarity. Page 6, line 5, it is noted that "or PVD-, or CVD-, coating" should be rephrased as --PVD coating, or CVD coating-- for idiomatic clarity.

The disclosure is objected to because of the following informalities: Note that sub-headings should be provided to delineate the different sections of the specification so as to provide clarity of description. Page 1, line 14, note that --above-- should be inserted prior to "applications" for an appropriate characterization. Page 3, lines 12, 13, it is noted that reference to "an any shape surface of a non-conductive body" is vague in meaning and needs clarification.

Page 5, line 20, note that reference to “this hollow conductor” is vague in meaning since no such “hollow conductor” has been previously defined and thus clarification is needed; line 27, note that reference to “out-radiating characteristic” is vague in meaning and needs clarification; line 33, note that reference to “manufacturing effort sinks considerably” is vague in meaning and needs clarification. Page 6, line 25, note that --of Figs. 1 and 2-- should be inserted after “12” for consistency with the labeling in those drawing figures; lines 30, 31, note that “which disappears on the non-ideal edge 38” is vague in meaning and needs clarification. Page 7, line 20, note that “Figs. 1 to 4” should be rephrased as --Figs. 1 & 2 and Figs. 3 & 4, respectively-- for an appropriate characterization. Note that the it is unclear whether the sheet entitled “**List of reference characters**” is intended to be a part of the specification, and it is intended to a part of the specification, where such a sheet is to be inserted. Appropriate clarification is needed. Note that reference label “14”, appearing in Fig. 2, needs a corresponding description in the specification relative to Fig. 2 for consistency with the labeling therein. Similarly, note that reference label “32” needs a description in the specification for clarity of description. Appropriate correction is required.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the metallized coating with gap shaped interruptions (i.e. claim 34) & a coaxial conductor (i.e. claim 36), respectively must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet,

even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The specification needs to provide a corresponding description for the “coaxial conductor” such as recited in claim 36.

Claim 41 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In claim 41, it is noted that the specification fails to provide an adequate written description such that one skilled in the art would not have been enabled to make and use the “dual mode horn antenna” having “a non-ideal edge” without resorting to undue experimentation. That is to say, the nature of the “non-ideal edge” is so inadequately disclosed

such that one skilled in the art would not have been able to make such a “non-ideal edge” without resorting to undue experimentation.

Claims 24-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 24, 42, note that it is unclear what are the metes and bounds intended to be encompassed by the recitation of “(whose) surface of any shape”. Clarification is needed.

In claim 26, it is noted that it is unclear, even in light of the specification, what characterizes the “body” to be “structured”. Clarification is needed.

In claim 28, it is noted that it is unclear which one of the “one, or more, electrically conductive layers” is intended by the recitation of “the electrically conductive layer”. Moreover, note that use of the term “preferred” renders the claimed vague and indefinite as to whether the specified range of thickness are the intended range defined by the claim (i.e. does the claim encompass other ranges of thickness’ than the “preferred” range?). Clarification is respectively needed.

In claim 29, note that it is unclear whether the “conductive layer is manufactured by metallizing” would be considered an appropriate characterization of this aspect of the invention. Clarification is needed.

In claim 33, note that use of the term “especially” renders the claim vague and indefinite since it is unclear whether the limitation subsequent to “especially” are intended to be positively limitations of the claim. Clarification is needed.

In claim 34, it is noted that “the metallized coating” lacks strict antecedent basis relative to the claim dependency from claim 24. Clarification is needed. Moreover, it is unclear whether the recited types of metallized coating can be characterized as proper alternatives, especially in view of their disparate functionality. Clarification is needed.

In claims 35, 36, 37, 38, note that the reference to “of concern” is vague in meaning and needs clarification. Moreover, note that it is unclear how the “metallized, plastic body” is intended to be related to the “body” with the “electrically conductive layers” as recited in claim 24, from which these claims directly depend. Clarification is needed.

In claim 39, it is noted that “the plastic body” lacks strict antecedent basis relative to the claim dependency from claim 35. Clarification is needed. Moreover, note that it is unclear, even in light of the specification, what is intended to encompass “the functional elements” and thus needs clarification. Finally, note that it is unclear how the recited “In-coupling hollow conductor, and horn antenna” are intended to be related to the structure as recited in claim 24, from which this claim directly depends. Clarification is needed.

In claim 41, it is noted that the reference to how “a non-conductive edge,” functions “as a dual-mode waveguide” is unclear, even in light of the specification. Clarification is needed.

The following claims have been found to be objectionable for reasons set forth below:

In claim 33, it is noted that “or PVD-, or CVD-, coating” should be rephrased as --PVD coating, or CVD coating-- for an appropriate characterization.

In claim 34, it is noted that “in- or out-coupling” should be rephrased as --input or output coupling-- for an appropriate characterization.

In claims 38, 39, note that “In-coupling,” should be rephrased as --input coupling-- for an appropriate characterization.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 24, 26, 29, 34, 35, 38; 42 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Asbaugh et al.

Asbaugh et al (e.g. FIG. 1) discloses a microwave conducting arrangement (i.e. a waveguide structure) comprising: a structured non-conductive cylindrically shape body (i.e. dielectric core 10) having an external surface thereof metallized as to form a tubular metal shell (i.e. 12) about the dielectric core (10) such as to be commensurate with the subject matter recited in claim 35. Moreover, note that an end flange conductor (i.e. 14) is formed in conjunction with the metallized dielectric waveguide core (i.e. 10, 12) to thereby inherently serve as an input/output coupling structure such as to be commensurate with the subject matter recited in claim 34.

Claims 24, 26, 29, 30, 36; 42, 44 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Temes.

Temes (e.g. FIG. 1) discloses a microwave conducting structure (i.e. a waveguide), comprising: a structured cylindrically shaped non-conductive body (i.e. outer dielectric wall 10) having an internal surface thereof applied with a conductive layer (i.e. 12) to thereby form a metallized waveguide structure. With respect to claims 30, 44, note that column 2, lines 43, 44



discloses that one way of applying the conductive layer to the dielectric wall of the non-conductive body is to spray the conductive layer on the surface of the non-conductive body. With respect to claim 36, note that FIG. 2 discloses that the microwave conducting structure is alternatively a coaxial transmission line having a non-conductive tube structure (i.e. 14, 16) internally and externally coated by conductive layers (18, 20), respectively.

Claims 24, 25, 26, 29, 33, 40; 42, 43 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Cohn et al (cited by applicants').

Cohn et al (FIG. 1) discloses a microwave conducting structure (i.e. waveguide mode converter 40) comprising: a structured cylindrically shaped non-conductive body (i.e. substrate 42) having a sinusoidally curved internal surface (i.e. with respect to claim 25) thereof applied with a conductive layer (i.e. superconducting coating 44) to thereby form a metallized mode converter structure such as to be commensurate with the claim 40 subject matter. With respect to claim 43, the metallized conductive layer can be formed by techniques such as sputtering or vapor deposition (i.e. see column 4, line 29).

Claims 24, 26, 27, 29, 35, 38; 42 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by the Japanese patent abstract to Watanabe (cited by applicants').

The Watanabe abstract discloses a microwave conducting structure (i.e. a waveguide) comprising: a structured cylindrically shaped non-conductive body (i.e. dielectric core material 4) having an external surface thereof applied with a conductive layer (i.e. metallic layer 5) to thereby form a metallized waveguide structure. Note that the dielectric core material (4) has excellent elasticity such as to be commensurate with the limitation recited in claim 27.

Claims 24, 26, 28, 29, 31, 32, 37, 39, 41; 42, 45, 46 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Collins.

Collins (FIG. 3) discloses a microwave conducting structure comprising: a structured non-conductive body assembly (i.e. planar elements 10, 12, 14 of polystyrene) having internal surfaces thereof applied with a conductive layer (i.e. metallization 60). Note that the planar element (10) includes a microwave horn disposed therein and the planar element (12) includes a hollow waveguide conductor (i.e. channel 62) for input/output coupling, which collectively define functional elements of complex shape. As described at column 3, lines 41-46, the metallization can be obtained by immersion of the assembly in a bath for electroless copper deposition (i.e. a chemical metallizing) as to be commensurate with the process recited in claims 31, 45. Moreover, electroless deposition is a conventionally recognized form of galvanizing (e.g. see Lo et al which teaches immersing a dielectric epoxy in a chemical bath to produce a conductive plating) such as to be commensurate with the process recited in claims 32, 45. Finally, the electroless deposition (i.e. galvanizing) produces a metallized coating having a thickness of 4 microns or micrometers such as to be commensurate with the range recited in claim 28.

Claims 24, 26, 29, 30, 37, 39, 41; 42, 44 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Butler et al.

Butler et al (e.g. FIG. 8) discloses a microwave conducting structure (i.e. a microwave waveguide horn 10) comprising: a structured non-conductive body (i.e. dielectric sidewall 22a, 22b) defining functional elements of complex shape (e.g. ridge cavities 47) having internal

Art Unit: 2817

surfaces thereof applied with a conductive layer (i.e. 45). Note that the conductive layer (45) is applied by a flame spraying process as described at column 3, line 20.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lo et al discloses a waveguide structure comprised of epoxy dielectric layers metallized by immersion into a chemical bath to producing conductive material plated onto the dielectric layers. Huynh et al discloses a waveguide having more than one conductive layers deposited on a waveguide body.

Any inquiry concerning this communication should be directed to Benny Lee at telephone number 571 272 1764.

**/BENNY LEE/  
PRIMARY EXAMINER  
ART UNIT 2817**

B. Lee